

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of fabricating a microfluidic device, comprising:

providing ~~first and second~~ first substrate layers;

fabricating a ~~microscale~~ groove into at least a first surface of at least one of the ~~first and second layers, and concurrently~~ first substrate layers; and concurrently fabricating an alignment structure into the ~~at least one~~ surface of the ~~first or second~~ first substrate layers at a desired position relative to the ~~microscale~~ groove;

~~mating one or more of a third component of the microfluidic device and aligning a tool with the alignment structure to align the third component or the tool relative to the microscale groove; and~~

forming an aperture in the first substrate layer with the tool.

2. (currently amended) The method of claim 1, wherein the first substrate layer comprises a silica-based substrate and the alignment structure is etched into the first surface of the first substrate.

3. (withdrawn) The method of claim 1, wherein the first substrate layer comprises a polymeric substrate and the alignment structure is embossed onto the first surface of the first substrate.

4. (withdrawn) The method of claim 1, wherein the first substrate comprises a polymeric substrate and the alignment structure is injection molded onto the first surface of the first substrate.

5. (currently amended) The method of claim 1, wherein the alignment structure comprises a depression on the first surface, and the tool comprises a drill.

6. (currently amended) The method of claim 1, wherein the third component comprises a capillary, and the alignment structure comprises an aperture or well that is configured to receive the a capillary element.

7. (currently amended) The method of claim 251, wherein the alignment structure comprises a notch at an edge of the first surface of the first substrate, the first groove terminating in the notch, the notch being sized to receive the capillary element and such that a capillary channel disposed through the capillary element is in fluid communication with the groovefurther comprising mating a second substrate layer with the first substrate layer.

8. (currently amended) The method of claim 267, wherein the second substrate layer comprises a second notch fabricated into a surface thereof at an edge of the surface of the second substrate layer, the second notch aperture being positioned to correspond with the notch aperture in the first substrate layer when the first and second substrate layers are mated together.

9. (currently amended) The method of claim 267, wherein the a capillary element is inserted into an aperture created by the notch in the first substrate and the notch aperture in the second substrate layer when the first and second substrate layers are mated, the capillary element operating as an alignment key during a step of bonding the first and second substrates together.

10. (currently amended) A method of fabricating a multilayered microfluidic device, comprising:

providing a first notch in the edge of a first substrate layer;

providing a second notch in the edge of a second substrate layer, the first and second notches being positioned to be complementary so that the first and second notches circumscribe a single opening when the first and second substrate layers are mated together;

inserting an alignment key into one of the first and second notches~~singl~~ opening, the alignment key being configured to fit into the first and second notches~~singl~~ opening when the first and second substrate layers are mated together; and aligned the first and second substrate layers in a first relative position; and

mating and bonding the first substrate layer to the second substrate layer in the first relative position.

11. (currently amended) The method of claim 10, wherein the first and second notches are disposed at the edges of the first and second substrate layers, respectively rectangular.

12. (currently amended) The method of claim 11, wherein the one of the first and second substrate layers comprises a groove fabricated into a surface thereof, the groove terminating in one of the first or second notches, and wherein the alignment key comprises a capillary element.

13. (currently amended) The method of claim 1211, wherein the capillary element comprises a rectangular capillary having a capillary channel disposed therethrough.